UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/714,257	11/14/2003	Christopher F. Bevis	KLA1P123/P1207	3626

22434 7590 06/30/2005

BEYER WEAVER & THOMAS LLP
P.O. BOX 70250
OAKLAND, CA 94612-0250

EXAMINER	
ROSENBERGER, RICHARD A	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/714,257	BEVIS ET AL.	
	Examiner	Art Unit	
	Richard A. Rosenberger	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-52 and 54-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *11-52* is/are allowed.

6)☒ Claim(s) *54-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 54, 56, 57, 63 and 64 are rejected under 35 U.S.C. 102(b) as being anticipated by Danko et al (US 5,659,390).

As in claim 54, the Danko et al reference, in figure 4 for example, shows a method for conducting surface inspection comprising: providing a workpiece (13) for inspection; illuminating the workpiece (by 83) to produce scattered light that includes light scattered from defects in the workpiece causing defect scatter and includes light scattered from non-defect portions of the workpiece generating an ordinary scattering pattern of the workpiece; and selectively detecting the defect scatter (by 29 and 87). The Danko et al reference shows detecting the defect scatter by detecting the scattered light (by 107); determining which of the scattered light comprises the ordinary scattering pattern of the workpiece (in a processor 109); and after identifying the ordinary scattering pattern, selectively excluding a substantial portion of the

ordinary scattering pattern from detection (by controlling SLM 29), thereby selectively detecting the defect scatter.

As in claim 56, the reference shows detecting the scattered light such that two dimensional images of the scattered light are generated (in 107); wherein determining which of the scattered light comprises the ordinary scattering pattern comprises analyzing the two-dimensional images to determine a spatial light distribution that corresponds to the ordinary scattering pattern of the workpiece (in processor 109); and wherein selectively detecting the defect scatter comprises selectively detecting scattered light that does not form part of the ordinary scattering pattern of the workpiece (by means of 29 and 87).

As in claim 57, the reference teaches determining which of the scattered light comprises the ordinary scattering pattern comprises analyzing the two-dimensional images to determine a spatial light distribution that corresponds to the majority of the light and defining this distribution as the ordinary scattering pattern of the workpiece; see column 6, lines 3-5 and 27-36 wherein it discusses blocking the brightest portions of the image as corresponding to the ordinary scattering (that is, the scattering by the pattern). This treats the majority of the light as defining the ordinary scattering as claimed, as the brightest portions of the pattern will, taken together, correspond to the majority of the light.

As in claims 63 and 64, the light selective array 29 is a liquid crystal device (column 5, lines 24-26) which, in functional cooperation with a polarizer, selectively filters out the ordinary scattering

4. Claims 55, and 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danko et al (US 5,659,390).

Claim 55 sets forth a processing step to analyze the defect scatter to characterize defects on the workpiece surface. The Danko reference does not appear to explicitly state that the defect image can be analyzed by processing circuitry for this purpose, but the intent, purpose and rationale for this type of inspection by detecting defects is for analyzing the selectively detected defect scatter to characterize the workpiece surface at least as acceptable or unacceptable. It is thus at least obvious to use the device for what is clearly its intended purpose of inspection, which requires that the data returned is analyzed to characterize the workpiece surface. Using the processing circuit to identify and categorize the data, as is so well known in the art that official notice is sufficient, and would have been obvious for the known utility and benefits of doing this type of known identification and categorization.

As in claim 58 through 60, the reference does not explicitly state what percentage of the light is in the blocked portion, but the system as describe will block the scattered light corresponding to the ordinary light, and in patterns in which the ordinary scattering is above 80% (claim 58) or above 99% (claim 58), that amount of light will be blocked. It is at least obvious to set up the system to be optimum for its intended purpose (claim 60), it would be foolish to select a suboptimal arrangement.

5. Claims 61 and 62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Danko (US 5,659, 390) in view of Goldberg (US 6,366,352).

See the rejection above of claim 54 over Danko.

Danko teaches using an array of reflective elements as the light selection array, but not one in which the ordinary light is reflected away.

Goldberg et al, in column 8, line 66 through column 9, line 12, teaches the use of a reflective light selective means, such as a MEMS, in a similar arrangement for the purpose of eliminating ordinary scattered light.

It would have been obvious to use a known reflective light selection means for the light selection array of Danko because, as taught by Goldberg et al, such reflective light selection means are known, known to be useful for such purposes, and known to be usable for such purposes.

6. As set forth in the previous office action, claims 11 through 52 are allowable.

7. The remarks filed 30 March 2005 have been considered.

The remarks argue that the Danko et al reference " fails to teach or suggest the limitation of 'determining which of the scattered light comprises the ordinary scattering pattern of the workpiece' and "after identifying the ordinary scattering pattern, selectively excluding a substantial portion of the ordinary scattering pattern from detection, thereby selectively detecting the defect scatter'" (remarks, page 11, lines 26-30; underlining in the original omitted). But this is exactly what the reference does do, and exactly what the reference intends to do. The device in the Danko et al reference operates through the recognition of the fact that background scattering pattern (what instant claim 54 calls "ordinary scattering pattern") is brighter than the defect scatter, and thus, by blocking the brighter portions of the total pattern, the remaining less intense

light will be the defect scatter. As the background (or "ordinary") scattering pattern is bright, the determination of the higher intensity portion of the pattern is, and is intended to be, "determining which of the scattered light comprises the ordinary scattering patter of the workpiece". By setting the filter (50) to block the brighter light, which is the background (or "ordinary") scattering pattern, the filter acts for the purpose of "excluding a substantial portion of the ordinary scattering pattern form detection", while allowing the less bright areas of the total light pattern (the portion of the pattern attributable to the defects) to pass to the detector enables "selectively detecting the defect scatter."

It is certainly true that the "sole point of the fourier mask 23 of Danko is to cut reflected light signals above a certain intensity and corresponding to pattern lines of the wafer" (remarks, page 12, lines 3-4). It is certainly *not* true that the reference "does not teach or suggest preferentially excluding a substantial portion of the ordinary scattering pattern" (remarks, page 12, lines 5-6). The light "corresponding to pattern lines of the wafer" and the light making up "the ordinary scattering pattern" is exactly the same light, and the arrangement of the Danko et al reference, by excluding one, excludes the other.

The remarks (page 13, lines 17-18) argue that Danko excludes light "without discrimination as to whether it is in the ordinary scattering pattern or not". This statement is not correct; this discrimination is exactly the purpose of the thresholding, to discriminate between the ordinary scattering pattern (which is brighter) and the light which is not (which is not as bright).

8. Applicant's amendment of 30 March 2005 wrote claim 54 in independent form without including all of the limitations of previous claim 53; the final step of "analyzing ..." has been omitted.

9. The change in scope of claim 54 noted above necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard A Rosenberger whose telephone number is (571) 272-2428. The examiner can normally be reached on Monday through Friday during the hours of 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

R. A. Rosenberger
24 June 2005

Richard A. Rosenberger
Primary Examiner